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style, and is printed and illustrated faultlessly. It is true that the theories advanced are mostly old ones, suggested by Schiaparelli, Pickering, and others, many of them having been elaborated by Flammarion and others; but Mr. Lowell has presented them very fully and suggestively. Scientifically, the leading faults of the book are: first, that so elaborate an argument for intelligent life on the planet, embracing a complex system of seasonal changes, should be based upon observations covering only one-fourth of only one Martian year; and second, that there should be so many evidences of apparent lack of familiarity with the literature of the subject.

LICK Observatory, University of California.

## "NOVA," Z CENTAURI AND THE NEBULA SUR-ROUNDING IT.

## By WILLIAM J. HUSSEY.

Last December a "new" star, very near the bright nebula N. G. C. 5253, in the constellation *Centaurus* was announced by the Harvard College Observatory in their Circular No. 4, as having been discovered by Mrs. Flemming from an examination of the Draper Memorial photographs taken at Arequipa, Peru.

The Circular states that no trace of this star can be found on fifty-five plates taken from May 21, 1889, to June 14, 1895, inclusive; that it appears as 7.2 magnitude on the plates of July 8 and 10, 1895, and as 10.9 on one of December 16, 1895; that, on December 19th, it was estimated at eleventh magnitude by Mr. Wendell, with the fifteen-inch equatorial at Cambridge.

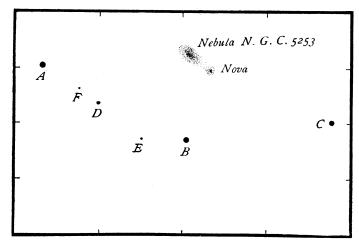
The Circular says: "The spectrum is unlike those of the new stars in *Auriga*, *Norma* and *Carina*, yet this object is like them in other respects. All were very faint or invisible for several years preceding their first known appearance. They suddenly attained their full brightness and soon began to fade."

In the *Cordoba Durchmusterung* there is a star (C. DM.—31° 10536), magnitude 9.5, having very nearly the position of the nebula N. G. C. 5253. The *Nova's* position differs from that of the nebula by only 1<sup>s</sup>.4 in Right Ascension and 18" in Declination, so that it was uncertain whether the C. DM. star referred to

the nebula, or to the *Nova*. In a small telescope with low power the appearance of the nebula is such that it might easily be mistaken for a star, 9.5 magnitude, though careful observation shows it to be hazy. This circumstance increases the uncertainty mentioned above.

On the nights of December 22, 1895 and January 2, 1896, Professor CAMPBELL measured the relative positions of the *Nova*, the nebula and three neighboring stars and compared the *Nova's* position with a Cordoba Zone star. In January and February I repeated these measurements. We obtained a close agreement of the nebula and C. DM.—31° 10536, both in magnitude and position. This rendered it all but certain that the C. DM. star refers to the nebula.

At the time of making our measurements, we also estimated the brightness of the *Nova*. The relative positions of the *Nova*, the nebula and the stars used for comparison are shown in the accompanying diagram; the positions are as seen in an inverting



telescope. The diagram includes  $24^s$  of Right Ascension and 4' of Declination, the center being at  $a = 13^h$   $32^m$   $48^s$ ,  $\delta = -30^\circ$  59', referred to equinox of 1875.0. The star A is given in the *Cordoba Duchmusterung* as  $9^m$ .7. The others have been estimated as follows: B,  $10^m$ ; C,  $10^{1/2}m$ ; D,  $14^{3/4}m$ ; E,  $15^{1/2}m$ ; and F,  $16^{1/4}m$ .

According to our estimates (see *Astronomical Journal*, No. 371), the *Nova* declined in brightness from 11.2 magnitude on December 22d, to 11.5 magnitude on February 19th.

I again looked up the Nova on June 11, 1896, and found that

it had decreased to 14.4 magnitude, and that it was surrounded by a faint, irregular nebula which seemed to extend continuously to the bright nebula, N. G. C. 5253.

On June 26th its brightness was estimated at 15¼, and on July 9th at nearly 16th magnitude. On the last date it was difficult to detect the star in the midst of the nebula surrounding it. On this date the nebula about the star was seen plainly to be continuous with the bright, adjacent nebula, N. G. C. 5253, of which it seems to be a part. When the star was brighter, the nebula about it was not seen; this was no doubt due to the overpowering light of the star, for as the star faded, the nebula became more and more conspicuous.

Mount Hamilton, Cal., July 15, 1896.

## LIST OF EARTHQUAKES IN CALIFORNIA FOR THE YEAR 1895.

COMPILED BY C. D. PERRINE.

The following list gives the dates and places of occurrence of earthquakes in California (including, also, a number outside of the State), compiled from observations at Mount Hamilton and reports received at the Lick Observatory, both by letter and newspaper. A number of disturbances have come under our notice which are not properly within our province, but which may possibly have escaped other compilers, and are, therefore, included.

This is a continuation of similar reports printed in these *Publications:* Vol. II, p. 74; Vol. III, p. 247; Vol. V, p. 127; Vol. VI, p. 41, and Vol. VII, p. 99. A more complete account will be published as a bulletin by the United States Geological Survey. The dates are civil dates. The times are Pacific standard (120th meridian).

Roman numerals enclosed in parentheses indicate the intensity on the Rossi-Forel scale. The reports of the Light-house Board, and of the Weather Bureau, should be consulted in this connection.

There are, as yet, but few stations on the Pacific Coast equipped with instruments for the observation of earthquakes.